

09538036

SEQ ID NO: 6

# SUMMARIES

| Result<br>No. | Score  | Query |   | Length | DB | ID       | Description        |
|---------------|--------|-------|---|--------|----|----------|--------------------|
|               |        | Match | % |        |    |          |                    |
| 1             | 2208   | 100.0 |   | 420    | 20 | AAW81358 | Human 7-transmembr |
| 2             | 2208   | 100.0 |   | 420    | 21 | AAY99930 | HLWAR77 polypeptid |
| 3             | 2208   | 100.0 |   | 420    | 21 | AAY79375 | Human neuropeptide |
| 4             | 2204   | 99.8  |   | 420    | 21 | AAB07426 | Amino acid sequenc |
| 5             | 2115   | 95.8  |   | 408    | 21 | AAY76882 | Human NPY-Y7 recep |
| 6             | 1730.5 | 78.4  |   | 417    | 21 | AAY79377 | Rat neuropeptide F |
| 7             | 1719   | 77.9  |   | 336    | 20 | AAW67774 | Partial human 7-tr |
| 8             | 1719   | 77.9  |   | 336    | 21 | AAY99931 | HLWAR77 polypeptid |
| 9             | 1666   | 75.5  |   | 405    | 21 | AAY76883 | Mouse NPY-Y7 recep |
| 10            | 1061   | 48.1  |   | 428    | 21 | AAY56887 | Human B5 receptor  |
| 11            | 1060   | 48.0  |   | 430    | 21 | AAY93151 | Novel human G-prot |
| 12            | 1060   | 48.0  |   | 430    | 21 | AAY79376 | Human neuropeptide |
| 13            | 1024   | 46.4  |   | 432    | 21 | AAY93146 | Novel rat G-protei |
| 14            | 1024   | 46.4  |   | 432    | 21 | AAY79373 | Rat neuropeptide F |
| 15            | 984    | 44.6  |   | 432    | 21 | AAY56886 | Rat B5 receptor po |
| 16            | 525.5  | 23.8  |   | 444    | 20 | AAW03649 | Human 7-transmembr |
| 17            | 525.5  | 23.8  |   | 444    | 22 | AAB61969 | Human HCRT2 polyp  |
| 18            | 522.5  | 23.7  |   | 444    | 22 | AAB61968 | Canine wild-type H |
| 19            | 519.5  | 23.5  |   | 460    | 22 | AAB61970 | Rat HCRT2 polypep  |
| 20            | 502    | 22.7  |   | 431    | 21 | AAY94993 | Human secreted pro |
| 21            | 502    | 22.7  |   | 431    | 22 | AAB74773 | Human G protein-co |
| 22            | 502    | 22.7  |   | 431    | 22 | AAB48963 | Human G protein-co |
| 23            | 501.5  | 22.7  |   | 402    | 17 | AAW06124 | Neuropeptide recep |
| 24            | 500    | 22.6  |   | 431    | 21 | AAY71309 | Human orphan G pro |
| 25            | 500    | 22.6  |   | 431    | 21 | AAB02843 | Human G protein co |
| 26            | 499.5  | 22.6  |   | 425    | 19 | AAW80456 | G-protein coupled  |
| 27            | 499.5  | 22.6  |   | 425    | 22 | AAB67489 | Amino acid sequenc |
| 28            | 499.5  | 22.6  |   | 425    | 22 | AAB67079 | Human HFGAN72 rece |
| 29            | 495.5  | 22.4  |   | 423    | 19 | AAW81460 | Human G-protein co |
| 30            | 494    | 22.4  |   | 431    | 21 | AAB02853 | Human G protein co |
| 31            | 492.5  | 22.3  |   | 423    | 18 | AAW34512 | G protein coupled  |
| 32            | 491.5  | 22.3  |   | 423    | 18 | AAW32797 | Human derived long |
| 33            | 476.5  | 21.6  |   | 369    | 17 | AAW06125 | Neuropeptide recep |
| 34            | 476.5  | 21.6  |   | 377    | 17 | AAW06126 | Neuropeptide recep |
| 35            | 476.5  | 21.6  |   | 389    | 19 | AAW80805 | Amino acid sequenc |
| 36            | 465    | 21.1  |   | 381    | 21 | AAY56888 | Human Y2 receptor  |
| 37            | 462.5  | 20.9  |   | 381    | 16 | AAR78273 | Rat hippocampal ne |
| 38            | 460.5  | 20.9  |   | 381    | 16 | AAR78272 | Rat hippocampal ne |
| 39            | 460    | 20.8  |   | 381    | 16 | AAR78271 | Human hippocampal  |
| 40            | 460    | 20.8  |   | 381    | 19 | AAW41710 | Rhesus monkey neur |
| 41            | 446    | 20.2  |   | 428    | 18 | AAW29104 | Enhanced CCK-A/gas |
| 42            | 445.5  | 20.2  |   | 444    | 14 | AAR38890 | Sequence encoded b |
| 43            | 445.5  | 20.2  |   | 444    | 18 | AAW21567 | LETO rat cholecyst |
| 44            | 445.5  | 20.2  |   | 444    | 22 | AAB66618 | Rat pancreatic CCK |
| 45            | 444.5  | 20.1  |   | 383    | 21 | AAB14324 | Rhesus Y1 receptor |

# ALIGNMENTS

RESULT 1

AAW81358

ID AAW81358 standard; Protein; 420 AA.

XX

AC AAW81358;

XX

DT 30-MAR-1999 (first entry)

XX

DE Human 7-transmembrane receptor HLWAR77.

XX

KW Human; transmembrane receptor; antagonist; infection; bacterium; fungus;

KW protozoan; virus; HIV; pain; cancer; anorexia; bulimia; asthma; ulcer;

KW Parkinson's disease; heart failure; hypotension; hypertension; asthma;  
KW urinary retension; osteoporosis; angina pectoris; myocardial infarction;  
KW allergy; benign prostatic hypertrophy; neurological disorder.  
XX  
OS Homo sapiens.  
XX  
PN EP884387-A2.  
XX  
PD 16-DEC-1998.  
XX  
PF 09-JUN-1998; 98EP-0304580.  
XX  
PR 13-JAN-1998; 98US-0006140.  
PR 11-JUN-1997; 97US-0049332.  
PR 02-DEC-1997; 97US-0067253.  
XX  
PA (SMIK ) SMITHKLINE BEECHAM CORP.  
XX  
PI Elshourbagy N, Sathe G;  
XX  
DR WPI; 1999-026581/03.  
DR N-PSDB; AAV68484.  
XX  
PT New DNA encoding 7-trans-membrane receptor polypeptide HLWAR77 -  
PT used to treat, diagnose and prevent infections, pain, cancers,  
PT anorexia, asthma, Parkinson's disease, acute heart failure,  
PT osteoporosis, ulcers, allergies and psychotic disorders  
XX  
PS Claim 11; Page 8-9; 27pp; English.  
XX  
CC This sequence represents the human 7-transmembrane receptor HLWAR77.  
CC The protein can be used to isolate agonists and antagonists. These can  
CC be used as active agents in the treatment of infections (e.g. bacterial,  
CC fungal, protozoal and viral infections, particularly HIV-1 or HIV-2),  
CC pain, cancers, anorexia, bulimia, asthma, Parkinson's disease, acute  
CC heart failure, hypotension, hypertension, urinary retension,  
CC osteoporosis, angina pectoris, myocardial infarction, ulcers, asthma,  
CC allergies, benign prostatic hypertrophy and psychotic and neurological  
CC disorders.  
XX  
SQ Sequence 420 AA;

Query Match 100.0%; Score 2208; DB 20; Length 420;  
Best Local Similarity 100.0%; Pred. No. 1.5e-223;  
Matches 420; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

|    |     |   |     |
|----|-----|---|-----|
| Qy | 1   | MNEKWDTNSSSENWHPIWNVNDTKHHLYSDINITYVNYLHQPVAAIFIISYFLIFFLCM   | 60  |
| Db | 1   | mnekwdtnsssenwhpiwnvndtkhhlysdinityvnylhqpqvaafiisyliffllcm   | 60  |
| Qy | 61  | MGNTVVCFIVMRNKHMTVTNLFILNLAISDLLVGIFCMPITLLDNIAGWPFGNTMCKI  | 120 |
| Db | 61  | mgntvvcfivmrnkhmhtvtnlfilnlaisdllvgifcmpitlldniagwpfgntmcki   | 120 |
| Qy | 121 | SGLVQGISVAASVFTLVIAIVDRFQCVVYPFKPKLTIKTAfVIIMIwVLAITIMSPSAV   | 180 |
| Db | 121 | sglvqgisvaasvftlvaiavdrfqcvvypfkpkltiktafviimiiwvlaitimspsav  | 180 |
| Qy | 181 | MLHVQEEKYRVRNLNSQNKTSPPVYWCREDWPNQEMRKIYTTVLFANIYLAPLSLIVIMYG   | 240 |
| Db | 181 | mlhvqeekyyrvrlnsqnktsppvwc redw p n q e m r k i y t t v l f a n i y l a p l s l i v i m y g                       | 240 |
| Qy | 241 | RIGISLFRAAVPHTGRKNQEQWHVVSRRKKQKIIKMLLIVALLFILSWLPLWTLMLMSDYA   | 300 |
| Db | 241 | rigislfraavphtgrknqeqwhvvsrrkkqkiikml livallfilswlplwtlmlmsdya  | 300 |
| Qy | 301 | DLSPNELQIINIYIPFAHWLAFGNSSVNPPIIYGFFNENFRRGFQEAFLQLCQKRAKPM   | 360 |
| Db | 301 | dls p n e l q i i n i y i p f a h w l a f g n s s v n p i i y g f f n e n f r r g f q e a f l q l c q k r a k p m | 360 |

Qy 361 EAYALKAKSHVLINTSNQLVQESTFQNPHGSETLLYRKS AEKPQQELVMEELKETTNSSEI 420  
|||||  
Db 361 eayalkakshvlintsnqlvqestfqnpghsetllyrksaekpqqelvmeelkettnssei 420

RESULT 2

AA99930

ID AAY99930 standard; Protein; 420 AA.

XX

AC AAY99930;

XX

DT 16-OCT-2000 (first entry)

XX

DE HLWAR77 polypeptide #1.

XX

KW G-protein coupled receptor family; HLWAR77; bacterial; fungal; viral;

KW infection; HIV; cancer; diabetes; asthma; Parkinson's disease;

KW heart failure; 7TM receptor; human.

XX

OS Homo sapiens.

XX

PN WO200031107-A1.

XX

PD 02-JUN-2000.

XX

PF 17-NOV-1999; 99WO-US27282.

XX

PR 19-NOV-1998; 98US-0195517.

XX

PA (SMIK ) SMITHKLINE BEECHAM CORP.

PA (SMIK ) SMITHKLINE BEECHAM PLC.

XX

PI Sathe GM, Elshourbagy NA, Ames RS, Sarau HM, Foley JJ;

PI Chambers JK;

XX

DR WPI; 2000-400024/34.

DR N-PSDB; AAA61230.

XX

PT HLWAR77 nucleic acids and polypeptides useful for treating a range of  
PT diseases, e.g. Parkinson's disease, asthma, cancers and osteoporosis -

XX

PS Claim 1; Page 14; 47pp; English.

XX

CC The present sequence is a G-protein coupled receptor (or 7TM) protein  
CC referred to as HLWAR77. The DNA encoding this sequence was cloned using  
CC 2 oligonucleotides (AAA61232 and AAA61233). These oligonucleotides were  
CC designed using an EST homologous to the 7TM superfamily. A ligand  
CC binding assay was used to screen HLWAR77 for ligands. The peptides  
CC A-18-F-NH2 and F-8-F-NH2 (AAY99932 and AAY99933) were found to be  
CC ligands for the receptor. The HLWAR77 polypeptides and nucleic acids may  
CC be used for the treatment of a wide range of diseases including  
CC bacterial, fungal and viral infections, HIV, cancer, diabetes, asthma,  
CC Parkinson's disease, heart failure and other disorders associated with  
CC G-protein coupled receptors. They may also be used to identify agonists  
CC and antagonists of HLWAR77 which may be used to correct imbalances in  
CC the expression or activity of the polypeptide.

XX

SQ Sequence 420 AA;

Query Match 100.0%; Score 2208; DB 21; Length 420;  
Best Local Similarity 100.0%; Pred. No. 1.5e-223;  
Matches 420; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MNEKWDTNSSSENWHPIWNVNDTKHHLYSDINITYVNYLHQPQVAAIFIISYFLIFFLCM 60  
|||||  
Db 1 mnekwdtnsssenwhpiwnvndtkhhlysdinityvnylhqpqvaaifiisyfliffclm 60

Qy 61 MGNTVVCFIVMRNKHMTVTNLFILNLAISDLLVGIFCMPITLLDNIAGWPFNTMCKI 120  
|||||  
Db 61 mgntvvcfivmrnkhmhtvtnlfilnlaisdllvgifcmpitlldniagwpgntmcki 120

|    |     |  |  |     |
|----|-----|--|--|-----|
| Qy | 121 | SGLVQGISVAASVFTLVAVAVDRFQC                                   | VVYPFKPKLTIKTAFVIIMIIWVLAITIMSPSAV     | 180 |
| Db | 121 | sglvqgisvaasvftlvaiavdrfqcvvypfkpkltiktafviimiiwvlaitimspsav |  | 180 |
| Qy | 181 | MLHVQEEKYYRVRLNSQNKTS  | SPVYWCREDWPNQEMRKIYTTVLFANIYLA         | 240 |
| Db | 181 | mlhvqeekyyrvrlnsqnkts  | spvywcredwpngemrkiyttvlfaniylapls      | 240 |
| Qy | 241 | RIGISLFRAAVPHTGRKNQEQWHVVS                                   | RKKQKIIKMLLIVALLFILSWLPLWTL            | 300 |
| Db | 241 | rigislfraavphtgrknqeqwhvvsrkkqkiikmllivallfilswlplwtlmlsda   |  | 300 |
| Qy | 301 | DLSPNELQIINIYIYPFAHWLAFGNSS                                  | VNPPIYGGFFNENFRRGFQEAFLQLCQKRAKPM      | 360 |
| Db | 301 | dlspsnelqiiniyiypfahwla                                      | fgnssvnpiiygffnenfrrgfqaefqlqlcqkrakpm | 360 |
| Qy | 361 | EAYALKAKSHVLINTSNQLVQESTFQ                                   | NPGETLLYRKSAEKPQQLVMEELKET             | 420 |
| Db | 361 | eayalkakshvlintsnqlvgestfqnp                                 | hgetllyrksaekpqqlvmeelkettnssei        | 420 |

RESULT 3

AAAY79375

ID AAY79375 standard; Protein; 420 AA.

XX

AC AAY79375;

XX

DT 01-AUG-2000 (first entry)

XX

DE Human neuropeptide FF (NPFF2) receptor.

XX

KW Neuropeptide FF receptor; NPFF2 receptor; human; antiinflammatory;

KW antiasthmatic; antidiabetic; immunostimulant; immunosuppressive;

KW nootropic; neuroprotective; analgesic; anorectic; antipsychotic;

KW antiaddictive; antimigraine; hypertensive; hypotensive; cardiant;

KW antiasthmatic; therapy; G protein coupled receptor.

XX

OS Homo sapiens.

XX

|    |     |                     |
|----|-----|---------------------|
| FH | Key | Location/Qualifiers |
|----|-----|---------------------|

|    |        |        |
|----|--------|--------|
| FT | Domain | 44..71 |
|----|--------|--------|

|    |  |                                 |
|----|--|---------------------------------|
| FT |  | /note= "transmembrane domain I" |
|----|--|---------------------------------|

|    |        |         |
|----|--------|---------|
| FT | Domain | 80..104 |
|----|--------|---------|

|    |  |                                  |
|----|--|----------------------------------|
| FT |  | /note= "transmembrane domain II" |
|----|--|----------------------------------|

|    |        |          |
|----|--------|----------|
| FT | Domain | 123..141 |
|----|--------|----------|

|    |  |                                   |
|----|--|-----------------------------------|
| FT |  | /note= "transmembrane domain III" |
|----|--|-----------------------------------|

|    |        |          |
|----|--------|----------|
| FT | Domain | 160..180 |
|----|--------|----------|

|    |  |                                  |
|----|--|----------------------------------|
| FT |  | /note= "transmembrane domain IV" |
|----|--|----------------------------------|

|    |        |          |
|----|--------|----------|
| FT | Domain | 220..243 |
|----|--------|----------|

|    |  |                                 |
|----|--|---------------------------------|
| FT |  | /note= "transmembrane domain V" |
|----|--|---------------------------------|

|    |        |          |
|----|--------|----------|
| FT | Domain | 272..297 |
|----|--------|----------|

|    |  |                                  |
|----|--|----------------------------------|
| FT |  | /note= "transmembrane domain VI" |
|----|--|----------------------------------|

|    |        |          |
|----|--------|----------|
| FT | Domain | 315..340 |
|----|--------|----------|

|    |  |                                   |
|----|--|-----------------------------------|
| FT |  | /note= "transmembrane domain VII" |
|----|--|-----------------------------------|

|    |               |   |
|----|---------------|---|
| FT | Modified-site | 8 |
|----|---------------|---|

|    |  |                         |
|----|--|-------------------------|
| FT |  | /note= "N-glycosylated" |
|----|--|-------------------------|

|    |               |    |
|----|---------------|----|
| FT | Modified-site | 20 |
|----|---------------|----|

|    |  |                         |
|----|--|-------------------------|
| FT |  | /note= "N-glycosylated" |
|----|--|-------------------------|

|    |               |    |
|----|---------------|----|
| FT | Modified-site | 31 |
|----|---------------|----|

|    |  |                         |
|----|--|-------------------------|
| FT |  | /note= "N-glycosylated" |
|----|--|-------------------------|

|    |               |     |
|----|---------------|-----|
| FT | Modified-site | 198 |
|----|---------------|-----|

|    |  |                         |
|----|--|-------------------------|
| FT |  | /note= "N-glycosylated" |
|----|--|-------------------------|

|    |               |     |
|----|---------------|-----|
| FT | Modified-site | 156 |
|----|---------------|-----|

|    |  |                           |
|----|--|---------------------------|
| FT |  | /note= "O-phosphorylated" |
|----|--|---------------------------|

|    |               |     |
|----|---------------|-----|
| FT | Modified-site | 254 |
|----|---------------|-----|

|    |  |                           |
|----|--|---------------------------|
| FT |  | /note= "O-phosphorylated" |
|----|--|---------------------------|

|    |               |     |
|----|---------------|-----|
| FT | Modified-site | 266 |
|----|---------------|-----|

|    |  |                           |
|----|--|---------------------------|
| FT |  | /note= "O-phosphorylated" |
|----|--|---------------------------|

XX

PN WO200018438-A1.

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XX PD      06-APR-2000.
XX
XX PF      24-SEP-1999;    99WO-US22384.
XX
XX PR      25-SEP-1998;    98US-0161113.
XX PR      22-FEB-1999;    99US-0255368.
XX
XX PA      (SYNA-) SYNAPTIC PHARM CORP.
XX
XX PI      Gerald CPG, Jones KA, Bonini JA, Borowsky B;
XX
XX DR      WPI; 2000-293017/25.
XX DR      N-PSDB; AAZ94667.
XX
XX PT      Nucleic acid encoding a mammalian neuropeptide FF (NPFF) receptor,
XX PT      useful for treatment of e.g pain, obesity, diabetes, hypertension,
XX PT      hypotension, hypoglycemia, respiratory disorders -
XX
XX PS      Claim 19; Fig 9; 253pp; English.
XX
XX CC      The present sequence is that of human neuropeptide FF (NPFF2)
XX CC      receptor, as deduced from a cDNA clone (see AAZ94667) isolated
XX CC      from a human spleen cDNA library. Highest levels of NPFF2 RNA
XX CC      are found in the placenta, indicating a role in gestational
XX CC      regulation. NPFF2 is also expressed in the central nervous system
XX CC      and peripheral tissue. It may be involved in modulation of learning
XX CC      and memory and in the regulation of fear, pain and analgesia, and
XX CC      may provide a target for treatment of depression, anxiety, phobias
XX CC      and mood disorders. Localisation to the caudate/putamen implies
XX CC      regulation of dopaminergic systems and a role in the regulation of
XX CC      extrapyramidal motor systems. The invention provides rat and
XX CC      human NPFF polypeptides and polynucleotides, vectors, host cells,
XX CC      antibodies, nucleic acid probes, antisense oligonucleotides,
XX CC      transgenic animals, methods of isolating mammalian NNPF receptors,
XX CC      methods of treating an abnormality associated with NPFF receptor
XX CC      activity, methods of determining binding of compounds to NPFF
XX CC      receptors, methods of identifying agonists and antagonists of NPFF
XX CC      receptors, and the agonists and antagonists obtained. Claimed
XX CC      methods of treating an abnormality that is alleviated by
XX CC      increasing/decreasing NPFF activity involve administering an NPFF
XX CC      receptor agonist/antagonist. The abnormality is a lower urinary
XX CC      tract disorder, an epinephrine release disorder, a gastrointestinal
XX CC      disorder, irritable bowel syndrome, a cardiovascular disorder, an
XX CC      electrolyte balance disorder, diuresis, hypertension, hypotension,
XX CC      diabetes, hypoglycemia, a respiratory disorder, asthma, a
XX CC      reproductive function disorder, an immune disorder, an endocrine
XX CC      disorder, a musculoskeletal disorder, a neuroendocrine disorder, a
XX CC      cognitive disorder, a memory disorder, a sensory modulation and
XX CC      transmission disorder, a motor coordination disorder, a sensory
XX CC      integration disorder, obesity, pain, psychotic behaviour,
XX CC      morphine tolerance, nicotine addiction, opiate addiction,
XX CC      affective disorder or migraine (all claimed).
XX
XX SQ      Sequence   420 AA;

Query Match          100.0%; Score 2208; DB 21; Length 420;
Best Local Similarity 100.0%; Pred. No. 1.5e-223;
Matches 420; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy      1 MNEKWDTNSSSENWHPIWNVNDTKHHLYSIDINITYVNYLHQPVAAIFIISYFLIFFLCM 60
Db      1 mnekwdtnssenwhpiwnvndtkhhlysdinityvnyylhqpvaaifiisyfliff lcm 60

Qy     61 MGNTVVCFIVMRNKHMHMTVTNLFILNLAISDLLVGIFCMPITLLDNIAGWPFGNTMCKI 120
Db     61 mgntvvcfivmrnkhmhtvtlnfilnlaisdllvgifcmpitlldniagwpfgntmcki 120

Qy    121 SGLVQGISAASVFVLVAIAVDRFQCVPVYPFKPKLTIKTAFVIIMIIVWLAITIMSPSAV 180

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|    |     |   |     |
|----|-----|---|-----|
| Qy | 49  | IISYFL---IFFLCMMGNTVVCFIVMRKNHMTVTNLFILNLAISDLLVGIFCMPITLLD   | 105 |
|    |     | : :     :         :     :     :   :                           |     |
| Db | 91  | IIVYMLYIPIFIFALIGNGTVCYIYVSTPRMRTVTNYFIASLAIGDILMSFFCEPSSFIS  | 150 |
| Qy | 106 | NIIAG-WPFGNTMCKISGLVQGISVAASVFTLVIAIVDRFQCVCVYPFKPKLTIKTAFVII | 164 |
|    |     | :   :       :     : :     :   :                               |     |
| Db | 151 | LFILNYWPFGLALCHFVNYSQAVSVLVSAYTLVAISIDRYIAIMWPLKPRITKRYATFII  | 210 |
| Qy | 165 | MIIWVLAITIMSPSAVM-----LHVQEEKYYRVRLNSQNKTSPPVYWCREDPWNQEM     | 215 |
|    |     | :   :   :   : :   :                 : :                       |     |
| Db | 211 | AGVWFIALATALPIPIVSGLDIPMSPWHTKCEKYI-----CREMWPSRSQ            | 255 |
| Qy | 216 | RKIYTTVLFANIYLAPLSLIVIMYGRIGISLFRAAVPHTGRKNQEQQHVVSRRKKQKIIKM | 275 |
|    |     | : :     : :       :     : :   :   :   :                       |     |
| Db | 256 | EYYTTLSLFALQFVVPLGLVIFTYARITIRVWAKRPPGEAETNRDQ--RMARSKRKMVKM  | 313 |
| Qy | 276 | LLIVALLFILSWLPLWTLMLL---SDYADLSPNELQIINIYIYPFAHWLAFGNSSVNPII  | 332 |
|    |     | :     : :         :   : :         :       :                   |     |
| Db | 314 | MLTVVIVFTCCWLFPFNILQLLLNDEEFAHWDP--YVWFAPHWLAMSHCYNPII        | 367 |
| Qy | 333 | YGFFNENFRRGF  | 344 |
|    |     | :   |     |

## SUMMARIES

| Result No. | Score  | %<br>Query Match | Length | DB | ID     | Description        |
|------------|--------|------------------|--------|----|--------|--------------------|
| 1          | 2208   | 100.0            | 420    | 4  | Q9NR49 | Q9nr49 homo sapien |
| 2          | 2204   | 99.8             | 522    | 4  | Q9Y5X5 | Q9y5x5 homo sapien |
| 3          | 1730.5 | 78.4             | 417    | 11 | Q9EQD2 | Q9eqd2 rattus norv |
| 4          | 1060   | 48.0             | 430    | 4  | Q9GZQ6 | Q9gzq6 homo sapien |
| 5          | 1024   | 46.4             | 432    | 11 | Q9EP86 | Q9ep86 rattus norv |
| 6          | 522.5  | 23.7             | 444    | 6  | Q9TUP7 | Q9tup7 canis famil |
| 7          | 499.5  | 22.6             | 425    | 4  | Q9HBV6 | Q9hbv6 homo sapien |
| 8          | 492.5  | 22.3             | 423    | 4  | Q9NYM4 | Q9nym4 homo sapien |
| 9          | 492.5  | 22.3             | 424    | 4  | Q9PLY8 | Q9ply8 homo sapien |
| 10         | 485    | 22.0             | 600    | 5  | Q9VW75 | Q9vw75 drosophila  |
| 11         | 479    | 21.7             | 422    | 6  | Q9TTQ9 | Q9ttq9 canis famil |
| 12         | 479    | 21.7             | 452    | 5  | Q9VB87 | Q9vb87 drosophila  |
| 13         | 470.5  | 21.3             | 429    | 5  | P92045 | P92045 lymnaea sta |
| 14         | 463.5  | 21.0             | 385    | 13 | Q9DDN6 | Q9ddn6 gallus gall |
| 15         | 460.5  | 20.9             | 381    | 11 | Q9ERC0 | Q9erc0 rattus norv |
| 16         | 460    | 20.8             | 381    | 6  | Q9GK74 | Q9gk74 macaca mula |
| 17         | 459    | 20.8             | 381    | 4  | Q9UE67 | Q9ue67 homo sapien |
| 18         | 457    | 20.7             | 384    | 6  | Q9TSI1 | Q9tsi1 sus scrofa  |
| 19         | 455.5  | 20.6             | 540    | 5  | Q9VRM0 | Q9vrm0 drosophila  |
| 20         | 451.5  | 20.4             | 375    | 13 | O57463 | O57463 brachydanio |
| 21         | 451.5  | 20.4             | 397    | 5  | Q9NHA4 | Q9nha4 boophilus m |
| 22         | 444.5  | 20.1             | 383    | 6  | Q9GK75 | Q9gk75 macaca mula |
| 23         | 442.5  | 20.0             | 463    | 11 | Q9EPJ7 | Q9epj7 mus musculu |
| 24         | 440    | 19.9             | 374    | 13 | Q9YHX1 | Q9yhx1 gadus morhu |
| 25         | 438.5  | 19.9             | 465    | 5  | O44426 | O44426 lymnaea sta |
| 26         | 433.5  | 19.6             | 377    | 13 | O73733 | O73733 brachydanio |
| 27         | 427.5  | 19.4             | 370    | 4  | O75194 | O75194 homo sapien |
| 28         | 427.5  | 19.4             | 440    | 5  | Q9N324 | Q9n324 caenorhabdi |
| 29         | 421.5  | 19.1             | 678    | 5  | Q94736 | Q94736 stomoxys ca |
| 30         | 419.5  | 19.0             | 373    | 13 | O73734 | O73734 brachydanio |
| 31         | 418    | 18.9             | 452    | 11 | Q9JKN0 | Q9jkn0 mus musculu |
| 32         | 417    | 18.9             | 394    | 5  | Q9U721 | Q9u721 drosophila  |
| 33         | 414    | 18.8             | 521    | 5  | Q9VAD2 | Q9vad2 drosophila  |
| 34         | 412    | 18.7             | 398    | 4  | Q9UDE7 | Q9ude7 homo sapien |
| 35         | 408.5  | 18.5             | 411    | 13 | Q9W6I3 | Q9w6i3 gallus gall |
| 36         | 404    | 18.3             | 398    | 4  | Q9UDE6 | Q9ude6 homo sapien |
| 37         | 403.5  | 18.3             | 375    | 6  | O97505 | O97505 sus scrofa  |
| 38         | 401    | 18.2             | 504    | 5  | Q9VGX8 | Q9vgx8 drosophila  |
| 39         | 396.5  | 18.0             | 380    | 5  | Q9NFV2 | Q9nfv2 lymnaea sta |
| 40         | 394.5  | 17.9             | 380    | 5  | Q9NFV0 | Q9nfv0 lymnaea sta |
| 41         | 390.5  | 17.7             | 380    | 5  | Q9NFV1 | Q9nfv1 lymnaea sta |
| 42         | 388.5  | 17.6             | 475    | 5  | Q9VNM1 | Q9vnm1 drosophila  |
| 43         | 388    | 17.6             | 457    | 5  | Q18534 | Q18534 caenorhabdi |
| 44         | 386    | 17.5             | 380    | 5  | Q9NFV3 | Q9nfv3 lymnaea sta |
| 45         | 385.5  | 17.5             | 372    | 11 | Q9Z2D4 | Q9z2d4 cavia porce |

## ALIGNMENTS

RESULT 1

Q9NR49

ID Q9NR49 PRELIMINARY; PRT; 420 AA.

AC Q9NR49;

DT 01-OCT-2000 (TrEMBLrel. 15, Created)

DT 01-OCT-2000 (TrEMBLrel. 15, Last sequence update)

DT 01-MAR-2001 (TrEMBLrel. 16, Last annotation update)

DE G-PROTEIN COUPLED RECEPTOR HLWAR77.

OS Homo sapiens (Human).

OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;

OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

OX NCBI\_TaxID=9606;  
RN [1]  
RP SEQUENCE FROM N.A.  
RA Elshourbagy N.A., Ames R.S., Fitzgerald L.R., Foley J.J., Chambers J.,  
RA Szekeres P., Schmidt D.B., Buckley P.T., Dytko G.M., Murdock P.R.,  
RA Tan K.B., Shabon U., Nuthuleganti P., Wang D.Y., Wilson S.,  
RA Bergsma D.J., Sarau H.M.;  
RT "Cloning and characterization of the human HLWAR77, a G-protein  
RT coupled receptor.";  
RL Submitted (APR-2000) to the EMBL/GenBank/DDBJ databases.  
DR EMBL; AF257210; AAF87078.1; -.  
DR InterPro; IPR000276; -.  
DR Pfam; PF00001; 7tm\_1; 1.  
DR PRINTS; PR00237; GPCRRHODOPSN.  
DR PROSITE; PS00237; G\_PROTEIN\_RECEPTOR; UNKNOWN\_1.  
KW Receptor.  
SQ SEQUENCE 420 AA; 48686 MW; 7A47C4CEEC1DBE07 CRC64;

Query Match 100.0%; Score 2208; DB 4; Length 420;  
Best Local Similarity 100.0%; Pred. No. 2.1e-161;  
Matches 420; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MNEKWDTNSSSENWHPIWNVNDTKHHLYSIDINITYVNYLHQPVAAIFIISYFLIFFLCM 60  
|  
Db 1 MNEKWDTNSSSENWHPIWNVNDTKHHLYSIDINITYVNYLHQPVAAIFIISYFLIFFLCM 60  
  
Qy 61 MGNTVVCFIVMRNKHMTVTNLFILNLAISDLLVGIFCMPITLLDNIAGWPFNGTMCKI 120  
|  
Db 61 MGNTVVCFIVMRNKHMTVTNLFILNLAISDLLVGIFCMPITLLDNIAGWPFNGTMCKI 120  
  
Qy 121 SGLVQGISVAASVFTLVAVDRFQCVVYPFKPKLTIKTAFFVIIMIIWVLAITIMSPSAV 180  
|  
Db 121 SGLVQGISVAASVFTLVAVDRFQCVVYPFKPKLTIKTAFFVIIMIIWVLAITIMSPSAV 180  
  
Qy 181 MLHVQEEKYRVRNLNSQNKTSPVYWCREDPNQEMRKIYTTVLFANIYLAFLSLIVIMYG 240  
|  
Db 181 MLHVQEEKYRVRNLNSQNKTSPVYWCREDPNQEMRKIYTTVLFANIYLAFLSLIVIMYG 240  
  
Qy 241 RIGISLFRAAVPHTGRKNQEQWHVVSRRKKQKIIKMLLIVALLFILSWLPLWTLMLMSDYA 300  
|  
Db 241 RIGISLFRAAVPHTGRKNQEQWHVVSRRKKQKIIKMLLIVALLFILSWLPLWTLMLMSDYA 300  
  
Qy 301 DLSPNELQIINIYIYPFAHWLAFGNSSVNPIIYGFFNENFRRGFQEAFLQLCQKRAKPM 360  
|  
Db 301 DLSPNELQIINIYIYPFAHWLAFGNSSVNPIIYGFFNENFRRGFQEAFLQLCQKRAKPM 360  
  
Qy 361 EAYALKAKSHVLINTSNQLVQESTFQNPGETLLYRKSAEKPPQELVMEELKETTNSSEI 420  
|  
Db 361 EAYALKAKSHVLINTSNQLVQESTFQNPGETLLYRKSAEKPPQELVMEELKETTNSSEI 420

SEQ ID NO: 44

#### SUMMARIES

| Result No. | Query  |       | Length | DB | ID       | Description        |
|------------|--------|-------|--------|----|----------|--------------------|
|            | Score  | Match |        |    |          |                    |
| 1          | 2213   | 100.0 | 417    | 21 | AA79377  | Rat neuropeptide F |
| 2          | 1884.5 | 85.2  | 405    | 21 | AA76883  | Mouse NPY-Y7 recep |
| 3          | 1730.5 | 78.2  | 420    | 20 | AAW81358 | Human 7-transmembr |
| 4          | 1730.5 | 78.2  | 420    | 21 | AA99930  | HLWAR77 polypeptid |
| 5          | 1730.5 | 78.2  | 420    | 21 | AA79375  | Human neuropeptide |
| 6          | 1728.5 | 78.1  | 420    | 21 | AAB07426 | Amino acid sequenc |
| 7          | 1689.5 | 76.3  | 408    | 21 | AA76882  | Human NPY-Y7 recep |
| 8          | 1365.5 | 61.7  | 336    | 20 | AAW67774 | Partial human 7-tr |
| 9          | 1365.5 | 61.7  | 336    | 21 | AA99931  | HLWAR77 polypeptid |
| 10         | 1030   | 46.5  | 428    | 21 | AA56887  | Human B5 receptor  |



|    |       |      |     |    |           |                    |
|----|-------|------|-----|----|-----------|--------------------|
| 11 | 1026  | 46.4 | 430 | 21 | AAAY93151 | Novel human G-prot |
| 12 | 1026  | 46.4 | 430 | 21 | AAAY79376 | Human neuropeptide |
| 13 | 1001  | 45.2 | 432 | 21 | AAAY93146 | Novel rat G-protei |
| 14 | 1001  | 45.2 | 432 | 21 | AAAY79373 | Rat neuropeptide F |
| 15 | 959   | 43.3 | 432 | 21 | AAAY56886 | Rat B5 receptor po |
| 16 | 523   | 23.6 | 444 | 20 | AAAY03649 | Human 7-transmembr |
| 17 | 523   | 23.6 | 444 | 22 | AAB61969  | Human HCRTR2 polyp |
| 18 | 522   | 23.6 | 460 | 22 | AAB61970  | Rat HCRTR2 polypep |
| 19 | 521   | 23.5 | 444 | 22 | AAB61968  | Canine wild-type H |
| 20 | 508   | 23.0 | 431 | 21 | AAAY94993 | Human secreted pro |
| 21 | 508   | 23.0 | 431 | 22 | AAB74773  | Human G protein-co |
| 22 | 508   | 23.0 | 431 | 22 | AAB48963  | Human G protein-co |
| 23 | 506   | 22.9 | 431 | 21 | AAAY71309 | Human orphan G pro |
| 24 | 506   | 22.9 | 431 | 21 | AAB02843  | Human G protein co |
| 25 | 501   | 22.6 | 402 | 17 | AAW06124  | Neuropeptide recep |
| 26 | 500   | 22.6 | 431 | 21 | AAB02853  | Human G protein co |
| 27 | 499   | 22.5 | 425 | 19 | AAW80456  | G-protein coupled  |
| 28 | 499   | 22.5 | 425 | 22 | AAB67489  | Amino acid sequenc |
| 29 | 499   | 22.5 | 425 | 22 | AAB67079  | Human HFGAN72 rece |
| 30 | 498   | 22.5 | 381 | 19 | AAW41710  | Rhesus monkey neur |
| 31 | 498   | 22.5 | 381 | 21 | AAAY56888 | Human Y2 receptor  |
| 32 | 493.5 | 22.3 | 381 | 16 | AAR78273  | Rat hippocampal ne |
| 33 | 493   | 22.3 | 381 | 16 | AAR78271  | Human hippocampal  |
| 34 | 492.5 | 22.3 | 381 | 16 | AAR78272  | Rat hippocampal ne |
| 35 | 484   | 21.9 | 423 | 19 | AAW81460  | Human G-protein co |
| 36 | 483   | 21.8 | 423 | 18 | AAW34512  | G protein coupled  |
| 37 | 482   | 21.8 | 423 | 18 | AAW32797  | Human derived long |
| 38 | 472   | 21.3 | 377 | 17 | AAW06126  | Neuropeptide recep |
| 39 | 472   | 21.3 | 389 | 19 | AAW80805  | Amino acid sequenc |
| 40 | 469.5 | 21.2 | 369 | 17 | AAW06125  | Neuropeptide recep |
| 41 | 464.5 | 21.0 | 428 | 18 | AAW29104  | Enhanced CCK-A/gas |
| 42 | 453.5 | 20.5 | 428 | 18 | AAW29102  | Human peptide horm |
| 43 | 453.5 | 20.5 | 428 | 22 | AAB66630  | Human CCK A recept |
| 44 | 448.5 | 20.3 | 430 | 14 | AAR40772  | Sequence encoded b |
| 45 | 448.5 | 20.3 | 430 | 22 | AAB66625  | Guinea pig CCKA re |

#### ALIGNMENTS

RESULT 1

AAAY79377

ID AAAY79377 standard; Protein; 417 AA.

XX

AC AAAY79377;

XX

DT 01-AUG-2000 (first entry)

XX

DE Rat neuropeptide FF (NPFF2) receptor.

XX

KW Neuropeptide FF receptor; NPFF2 receptor; rat; antiinflammatory;

KW antiasthmatic; antidiabetic; immunostimulant; immunosuppressive;

KW nootropic; neuroprotective; analgesic; anorectic; antipsychotic;

KW antiaddictive; antimigraine; hypertensive; hypotensive; cardiant;

KW antiasthmatic; therapy; G protein coupled receptor.

XX

OS Rattus norvegicus.

XX

FH Key Location/Qualifiers

FT Domain 44..71

FT /note= "transmembrane domain I"

FT Domain 81..104

FT /note= "transmembrane domain II"

FT Domain 123..141

FT /note= "transmembrane domain III"

FT Domain 161..180

FT /note= "transmembrane domain IV"

FT Domain 220..243

FT /note= "transmembrane domain V"

FT Domain 271..296

FT /note= "transmembrane domain VI"

FT Domain 314..339  
 FT /note= "transmembrane domain VII"  
 FT Modified-site 10  
 FT /note= "N-glycosylated"  
 FT Modified-site 18  
 FT /note= "N-glycosylated"  
 FT Modified-site 113  
 FT /note= "N-glycosylated"  
 FT Modified-site 195  
 FT /note= "N-glycosylated"  
 FT Modified-site 154  
 FT /note= "O-phosphorylated"  
 FT Modified-site 263  
 FT /note= "O-phosphorylated"  
 FT Modified-site 264  
 FT /note= "O-phosphorylated"  
 XX  
 PN WO200018438-A1.  
 XX  
 PD 06-APR-2000.  
 XX  
 PF 24-SEP-1999; 99WO-US22384.  
 XX  
 PR 25-SEP-1998; 98US-0161113.  
 PR 22-FEB-1999; 99US-0255368.  
 XX  
 PA (SYNA-) SYNAPTIC PHARM CORP.  
 XX  
 PI Gerald CPG, Jones KA, Bonini JA, Borowsky B;  
 XX  
 DR WPI; 2000-293017/25.  
 DR N-PSDB; AAZ94669.  
 XX  
 PT Nucleic acid encoding a mammalian neuropeptide FF (NPFF) receptor,  
 PT useful for treatment of e.g pain, obesity, diabetes, hypertension,  
 PT hypotension, hypoglycemia, respiratory disorders -  
 XX  
 PS Claim 21; Fig 23A-B; 253pp; English.  
 XX  
 CC The present sequence is that of rat neuropeptide FF (NPFF2)  
 CC receptor, as deduced from a cDNA clone (see AAZ94669) isolated  
 CC from rat spinal cord cDNA. High levels of rat NPFF2 mRNA are  
 CC found in the central nervous system. Expression patterns suggest  
 CC roles for NPFF2 in neuroendocrine regulation, and in regulation of  
 CC circadian rhythm, regulation of appetite and other functions  
 CC modulated by the hypothalamus. A possible role in regulation of  
 CC cardiovascular function is also suggested. High levels in the  
 CC amygdala suggest a role in modulation of mood, fear, phobia and  
 CC anxiety, and NPFF2 may be a target for treatment of depression and  
 CC other neuropsychiatric disorders. The invention provides rat  
 CC and human NPFF polypeptides and polynucleotides, vectors, host  
 CC cells, antibodies, nucleic acid probes, antisense oligonucleotides,  
 CC transgenic animals, methods of isolating mammalian NPFF receptors,  
 CC methods of treating an abnormality associated with NPFF receptor  
 CC activity, methods of determining binding of compounds to NPFF  
 CC receptors, methods of identifying agonists and antagonists of NPFF  
 CC receptors, and the agonists and antagonists obtained. Claimed  
 CC methods of treating an abnormality that is alleviated by  
 CC increasing/decreasing NPFF activity involve administering an NPFF  
 CC receptor agonist/antagonist. The abnormality is a lower urinary  
 CC tract disorder, an epinephrine release disorder, a gastrointestinal  
 CC disorder, irritable bowel syndrome, a cardiovascular disorder, an  
 CC electrolyte balance disorder, diuresis, hypertension, hypotension,  
 CC diabetes, hypoglycemia, a respiratory disorder, asthma, a  
 CC reproductive function disorder, an immune disorder, an endocrine  
 CC disorder, a musculoskeletal disorder, a neuroendocrine disorder, a  
 CC cognitive disorder, a memory disorder, a sensory modulation and  
 CC transmission disorder, a motor coordination disorder, a sensory  
 CC integration disorder, obesity, pain, psychotic behaviour,  
 CC morphine tolerance, nicotine addiction, opiate addiction,  
 CC affective disorder or migraine (all claimed).

XX  
SQ Sequence 417 AA;

Query Match 100.0%; Score 2213; DB 21; Length 417;  
Best Local Similarity 100.0%; Pred. No. 6e-241;  
Matches 417; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MGKRWDSNSSGSWDHIWSGNDTQHPWYSIDINITYMNYLHQPHVTAVFISSYFLIFFLCM 60  
|  
Db 1 mgkrwdsnssgswdhiwsgndtqhpwysidinitymnylhqphvtavfissyfliff lcm 60  
  
Qy 61 VGNTVVCVYVIRNRYMHTVTNFFIFNLAISDLLVGIFCMPITLLDNIAGWPFSSMCKI 120  
|  
Db 61 vgn tv cv yv ir n r y m h t v t n f f i f n l a i s d l l v g i f c m p i t l l d n i a g w p f g s s m c k i 120  
  
Qy 121 SGLVQGISVAASVFTLVIAVDRFRCVVPFKPKLTVKTA FVMIVIIWGLAITIMTPSAI 180  
|  
Db 121 s g l v q g i s v a a s v f t l v a i a v d r f r c v v p f k p k l t v k t a f v m i v i i w g l a i t i m t p s a i 180  
  
Qy 181 MLHVQEEKYYRVLSSHNTSTVYWCREDPNQEMRRIYTTVLFATIYLA PLSLIVIMYA 240  
|  
Db 181 m l h v q e e k y y r v l s s h n t s t v y w c r e d p n q e m r r i y t t v l f a t i y l a p l s l i v i m y a 240  
  
Qy 241 RIGASLFKTSAHSTGKQRLQVHVS KKKQKVIMLLTVALLFILSWLPLWTLMMLSDYAD 300  
|  
Db 241 r i g a s l f k t s a h s t g k q r l e q v h v s k k k q k v i m l l t v a l l f i l s w l p l w t l m m l s d y a d 300  
  
Qy 301 LSPNKL RVINIYVYPFAHWLAF CNSSVNP IYGGFFNENFRSGFQDAFQFCQKKVKPQEAY 360  
|  
Db 301 l s p n k l r v i n i y v y p f a h w l a f c n s s v n p i y g g f f n e n f r s g f q d a f q f c q k k v k p q e a y 360  
  
Qy 361 GLRAKRNLDINTSGLLVHEPASQNP SGENLGCRKSADNPTQESLMEETGEATNSTET 417  
|  
Db 361 g l r a k r n l d i n t s g l l v h e p a s q n p s g e n l g c r k s a d n p t q e s l m e e t g e a t n s t e t 417

#### SUMMARIES

| Result No. | Query |              | DB    | ID     | Description        |
|------------|-------|--------------|-------|--------|--------------------|
|            | Score | Match Length |       |        |                    |
| 1          | 498   | 22.5         | 381 2 | I39187 | neuropeptide Y/pep |
| 2          | 484.5 | 21.9         | 449 2 | A41738 | neuropeptide Y rec |
| 3          | 477.5 | 21.6         | 423 2 | B40470 | glucocorticoid-ind |
| 4          | 457.5 | 20.7         | 443 2 | D40470 | glucocorticoid-ind |
| 5          | 453.5 | 20.5         | 428 2 | JN0692 | cholecystokinin ty |
| 6          | 448.5 | 20.3         | 430 2 | I51898 | cholecystokinin A  |
| 7          | 448   | 20.2         | 444 2 | A42685 | cholecystokinin re |
| 8          | 442.5 | 20.0         | 436 2 | JC5599 | cholecystokinin-A  |
| 9          | 439   | 19.8         | 427 2 | S50150 | gastric CCK-A rece |
| 10         | 438.5 | 19.8         | 366 2 | S71152 | neuropeptide Y/pep |
| 11         | 438.5 | 19.8         | 491 2 | C40470 | glucocorticoid-ind |
| 12         | 434.5 | 19.6         | 384 2 | A45490 | neuropeptide Y/pep |
| 13         | 427   | 19.3         | 370 1 | I52315 | G protein-coupled  |
| 14         | 422   | 19.1         | 349 2 | S12863 | G protein-coupled  |
| 15         | 422   | 19.1         | 382 2 | B46133 | neuropeptide Y/pep |
| 16         | 421.5 | 19.0         | 519 2 | S17783 | tachykinin recepto |
| 17         | 421   | 19.0         | 382 2 | S27388 | neuropeptide Y rec |
| 18         | 409   | 18.5         | 384 2 | S20303 | neurokinin 2 recep |
| 19         | 408.5 | 18.5         | 457 2 | T29741 | hypothetical prote |
| 20         | 407   | 18.4         | 385 2 | S55524 | neurokinin 3 recep |
| 21         | 405.5 | 18.3         | 394 2 | JC7209 | galanin receptor - |
| 22         | 405   | 18.3         | 452 2 | A34916 | neurokinin 3 recep |
| 23         | 402   | 18.2         | 390 2 | A36737 | neurokinin 2 recep |
| 24         | 399.5 | 18.1         | 398 1 | JQ1059 | neurokinin 2 recep |
| 25         | 395.5 | 17.9         | 391 2 | T32517 | hypothetical prote |
| 26         | 394   | 17.8         | 450 2 | A55886 | dopamine receptor  |
| 27         | 394   | 17.8         | 455 2 | T15622 | hypothetical prote |